BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP

TELEPHONE: (303) 740-1980

INTELLECTUAL PROPERTY LAW
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

FACSIMILE: (303) 740-6962

FACSIMILE COVER SHEET

Deliver to: Yong Soo Chong, USPTO
Art Group: 1617
Facsimile No.: (571) 273-8300
Date: November 26, 2007
From: Brent E. Vecchia, Reg. No. 48,011
Our Docket No.: 56301P5007
Number of pages 32 including this sheet.
Application No.: 10/769,598
Filing Date: 1/30/2004
Docket Due Date(s): 11/25/2007

Enclosed are the following documents:

- ☐ Amendment: _____ (___pgs)
- ☒ Appeal Brief (28 pgs)
- ☐ Application: _____ (___pgs) w/cover & abstract)
- ☐ Assignment & Cover Sheet (___pgs)
- ☐ Certificate of _____
- ☐ Continued Prosecution Application (CPA)
- ☐ Declaration & POA (___pgs)
- ☐ Drawings: ___sheets, ___ figures
- ☐ Extension of Time: _____
- ☒ Fee Transmittal (in duplicate)
- ☐ IDS & PTO/SB/08 (___pgs)
- ☐ Other: _____
- ☐ Issue Fee Transmittal
- ☐ Notice of Appeal (in duplicate)
- ☐ Petition for: _____
- ☐ Request for Continued Examination (RCE)
- ☐ Reply Brief (___pgs)
- ☐ Request & Certification Under 35 USC 122(b)(2)(B)(i)
- ☐ Request to Rescind Previous Nonpublication Request
- ☐ Response to Notice of Missing Parts & Formalities Letter
- ☐ Response to Written Opinion (___pgs)
- ☐ Terminal Disclaimer
- ☐ Transmittal of Publication Fee Due
- ☒ Transmittal Letter

CERTIFICATE OF MAILING/TRANSMISSION (37 CFR 1.8A)

I hereby certify that this correspondence is being transmitted by facsimile on the date shown below to the United States Patent and Trademark Office.

Wendi Lou Rostan — 11/26/2007
Wendi Lou Rostan — *Date*

RECEIVED
CENTRAL FAX CENTER

NOV 26 2007

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission	32

Application No.	10/769,598
Filing Date	January 30, 2004
First Named Inventor	Peter C. Zhu
Art Unit	1617
Examiner Name	Yong Soo Chong
Attorney Docket Number	56301P5007

ENCLOSURES *(check all that apply)*

- [x] Fee Transmittal Form
  - [x] Fee Attached
- [ ] Amendment / Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
  - [ ] PTO/SB/08
- [ ] Certified Copy of Priority Document(s)
- [ ] Response to Missing Parts/ Incomplete Application
  - [ ] Basic Filing Fee
  - [ ] Declaration/POA
  - [ ] Response to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s)
  - [ ] Landscape Table on CD
- [ ] After Allowance Communication to TC
- [ ] Appeal Communication to Board of Appeals and Interferences
- [x] Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
- [ ] Proprietary Information
- [ ] Status Letter
- [x] Other Enclosure(s) *(please identify below):*

Facsimile Cover Sheet

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Brent E. Vecchia, Reg. No. 48,011 BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Signature	Brent E. Vecchia
Date	November 26, 2007

CERTIFICATE OF MAILING/TRANSMISSION

I hereby certify that this correspondence is being transmitted via facsimile on the date shown below to the United States Patent and Trademark Office.

Typed or printed name	Wendi Lou Rostan		
Signature	Wendi Lou Rostan	Date	November 26, 2007

Based on PTO/SB/21 (10-07) as modified by Blakely, Sokoloff, Taylor & Zafman (wlr) 10/05/2007.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

RECEIVED
CENTRAL FAX CENTER
NOV 26 2007

FEE TRANSMITTAL for FY 2007

Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27.

TOTAL AMOUNT OF PAYMENT ($) 510.00

Complete if Known	
Application Number	10/769,598
Filing Date	January 30, 2004
First Named Inventor	Peter C. Zhu
Examiner Name	Chong, Yong Soo
Art Unit	1617
Attorney Docket No.	56301P5007

METHOD OF PAYMENT *(check all that apply)*

☐ Check ☐ Credit card ☐ Money Order ☐ None ☐ Other (please identify): _____

☒ Deposit Account Deposit Account Number: 02-2666 Deposit Account Name: Blakely, Sokoloff, Taylor & Zafman LLP

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee

☒ Charge any additional fee(s) or underpayment of fee(s) under 37 CFR §§ 1.16, 1.17, 1.18 and 1.20. ☒ Credit any overpayments

FEE CALCULATION

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
2053	130	2053	130	Non-English specification	
1251	120	2251	60	Extension for reply within first month	
1252	460	2252	230	Extension for reply within second month	
1253	1,050	2253	525	Extension for reply within third month	
1254	1,640	2254	820	Extension for reply within fourth month	
1255	2,230	2255	1,115	Extension for reply within fifth month	
1401	510	2401	255	Notice of Appeal	
1402	510	2402	255	Filing a brief in support of an appeal	510.00
1403	1,030	2403	515	Request for oral hearing	
1451	1,510	2451	1,510	Petition to institute a public use proceeding	
1460	130	2460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
1809	810	1809	405	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	810	2810	405	For each additional invention to be examined (37 CFR § 1.129(b))	
				Other fee (specify) _____	
				SUBTOTAL (2)	($) 510.00

SUBMITTED BY Complete (if applicable)

Name (Print/Type)	Brent E. Vecchia	Registration No. (Attorney/Agent)	48,011	Telephone	(303) 740-1980
Signature	Brent E. Vecchia			Date	11/26/07

Based on PTO/SB/17 (12-04) as modified by Blakely, Sokoloff, Taylor & Zafman (wlr) 12/15/2004.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

RECEIVED
CENTRAL FAX CENTER

NOV 26 2007

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application. No.	: 10/769,598	Confirmation No.	: 8771
1st Named Inventor	: Peter C. Zhu	Art Unit	: 1617
Filed	: January 30, 2004	Examiner	: Chong, Yong Soo
Docket No.	: 056301.P5007	Customer No.	: 8791

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF
IN SUPPORT OF APPELLANT'S APPEAL
TO THE BOARD OF PATENT APPEALS AND INTERFERENCES

Sir:

This brief is in furtherance of the Notice of Appeal, filed in the above-captioned case on September 25, 2007. Applicants (hereafter "Appellants") hereby submit this Brief (37 C.F.R. § 41.37). The fees required under § 41.20(b)(2), and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying Transmittal of Appeal Brief. Appellants respectfully request consideration of this appeal by the Board of Patent Appeals and Interferences for allowance of the above-captioned patent application.

An oral hearing is not desired.

TABLE OF CONTENTS

This brief contains these items under the following headings, and in the order set forth below (37 C.F.R. § 41.37c(1)):

Page 14 of this brief bears the practitioner's signature.

I. REAL PARTY IN INTEREST (37 C.F.R. § 41.37(c)(1)(i))

The real party in interest in this appeal is Ethicon, Inc., U.S. Route 22, Somerville, New Jersey 08876, to whom the invention is assigned.

II. RELATED APPEALS AND INTERFERENCES (37 C.F.R. § 41.37(c)(1)(ii))

With respect to other appeals or interferences that will directly affect, or be affected by, or have a bearing on the Board's decision in this appeal, to the best of Appellant's knowledge, there are no such appeals or interferences.

III. STATUS OF THE CLAIMS (37 C.F.R. § 41.37(c)(1)(iii))

The status of the claims in this application are:

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims 1, 3-16, 19-25 and 27-37 are currently pending in the application.

B. STATUS OF ALL THE CLAIMS

1. Claims cancelled: 2, 17-18 and 26.
2. Claims withdrawn from consideration but not cancelled: 5-6, 9, 11-16, 21, 24, 32 and 35-36.
3. Claims pending: 1, 3-16, 19-25 and 27-37.
4. Claims allowed: None.
5. Claims rejected: 1, 3-4, 7-8, 10, 19-20, 22-23, 25, 27-31, 33-34 and 37.

C. CLAIMS ON APPEAL

Claims 1, 3-16, 19-25 and 27-37 are on appeal.

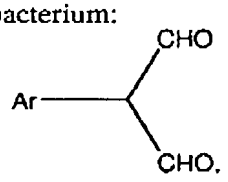
IV. STATUS OF AMENDMENTS (37 C.F.R. § 41.37(c)(1)(iv))

A response was not submitted in response to the Final Office Action mailed on June 25, 2007. A response was submitted on April 30, 2007 in response to the Office Action mailed December 28, 2006. The response included amendments to the claims. As understood by Appellant, the Examiner entered the amendments. A copy of all claims on appeal is attached hereto as an appendix of claims.

V. SUMMARY OF CLAIMED SUBJECT MATTER (37 C.F.R. § 41.37(c)(1)(v))

Embodiments of the invention pertain to germicidal compositions containing phenylmalonaldehyde-type compounds, or mixtures of phenylmalonaldehyde-type compounds and phthalaldehydes, and methods of using such compositions for disinfection or sterilization. See e.g., the Title and the Abstract. See e.g., paragraphs [0021] through [0031], and paragraphs [0060] through [0065].

Independent claim 1 pertains to a germicidal composition, according to a first embodiment of the invention. See e.g., paragraphs [0021] through [0031]. The germicidal composition includes a diluent. See e.g., paragraphs [0021] and [0090]. The germicidal composition also includes an amount of a compound of the following formula effective to kill mycobacterium:



See e.g., paragraph [0021] including formula (II) and original claim 1. The Ar is an aryl group (see e.g., paragraph [0021] selected from the group consisting of phenyl, 4-pyrimidinyl, and 2-(2-nitro-3-formyl-phenyl). See e.g., Table 4 on page 10 and paragraph [0022]. The germicidal composition also includes a corrosion inhibitor. See e.g., paragraph [0090].

Independent claim 19 pertains to a germicidal composition, according to a second embodiment of the invention. See e.g., paragraphs [0060] through [0065]. The germicidal composition includes a diluent. See e.g., paragraphs [0061] and [0090]. The germicidal composition also includes phenyl-propanedial and isophthalaldehyde. See e.g., paragraph [0060]. The germicidal composition is effective to kill mycobacterium. See e.g., Example 11 on page 28.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL (37 C.F.R. § 41.37(c)(1)(vi))

A. Claim 27 is rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement;

B. Claims 1, 3-4, 7-8, 10, 19-20, 22-23, 25, 31, 34 and 37 are rejected under 35 U.S.C. § 103(a) as being obvious over Klimko et al., Zhurnal Obshchei Khimii, 1959, 29, pg. 4027-4029, (hereinafter Klimko) in view of U.S. Patent No. 6,429,220 to Yagi et al. (hereinafter Yagi), U.S. Patent Application 2004/0071653 by Bratescu et al. (hereinafter Bratescu) and Duran-Patron et al., Tetrahedron, 55, 1999, pg. 2389-2400 (hereinafter Duran-Patron).

VII. ARGUMENT (37 C.F.R. § 41.37(c)(1)(vii))

A. REJECTION OF CLAIM 27 UNDER 35 U.S.C. § 112, FIRST PARAGRAPH IS BELIEVED TO BE IMPROPER.

GROUP I: CLAIM 27

The Examiner has rejected claim 27 under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description requirement.

Appellants respectfully submit that claim 27 fully complies with 35 U.S.C. § 112, first paragraph. There are at least two reasons.

Firstly, paragraph [0020] disclosed that:

> [0020] A potential problem with known germicides that are already being used in commerce is that microorganisms may become resistant to the germicides. Microorganisms, such as **tuberculosis** (emphasis added), which were once relatively easy to kill, may become more resistant to the germicides, and correspondingly more difficult to kill. Certain bacteria are already becoming resistant to glutaraldehyde. New germicides with even small structural differences from known or currently employed germicides may counteract or compromise the microorganisms resistance or tolerance. As such, **the new germicides disclosed herein may greatly advance the arts of disinfection and sterilization** (emphasis added).

Appellants respectfully submit that paragraph [0020] clearly discloses that the new germicides disclosed in the patent application may greatly advance the arts of disinfection and sterilization by killing microorganisms such as **tuberculosis**.

Secondly, Appellants respectfully submit that it is well known in the art that disinfection and sterilization may involve killing tuberculosis. The present patent application pertains to germicidal compositions, and to methods of using such compositions for disinfection or sterilization. See e.g., the Title. Pages 9-13 of the present patent application disclose that propanedial compounds have germicidal efficacy, and may be used to form germicidal

compositions useful for disinfection or sterilization. Tuburculosis is a well known bacteria and it is well known that disinfection or sterilization may involve contacting a germicidal composition with tuburculosis, especially since tuburculosis is commonly found in hospitals where germicidal compositions are known to be used. Furthermore, Examples 4 and 5 on pages 11 and 12 disclose that several germicidal solutions each containing one of the propanedial compounds were tested for their effectiveness in killing *Mycobacterium terrae*. Paragraphs [0028] and [0031] explain that the *Mycobacterium terrae* was contacted with the germicidal solutions. Paragraph [0091] disclosed that the germicidal compositions may be used to kill other than *Mycobacterium terrae* bacteria.

Accordingly, Appellants respectfully submit that claim 27 is fully supported by the original disclosure and complies with all requirements of 35 U.S.C. § 112, first paragraph.

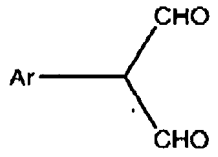
B. REJECTION OF CLAIMS 1, 3-4, 7-8, 10, 19-20, 22-23, 25, 31, 34 AND 37 UNDER 35 U.S.C. § 103(A) AS BEING OBVIOUS OVER KLIMKO ET AL., ZHURNAL OBSHCHEI KHIMII, 1959, 29, PG. 4027-4029, (HEREINAFTER KLIMKO) IN VIEW OF U.S. PATENT NO. 6,429,220 TO YAGI ET AL. (HEREINAFTER YAGI), U.S. PATENT APPLICATION 2004/0071653 BY BRATESCU ET AL. (HEREINAFTER BRATESCU) AND DURAN-PATRON ET AL., TETRAHEDRON, 55, 1999, PG. 2389-2400 (HEREINAFTER DURAN-PATRON) IS BELIEVED TO BE IMPROPER.

GROUP II: CLAIMS 1, 3-16, 25, 27-26

Claim 1 pertains to a germicidal composition comprising:

"*a diluent;*

an amount of a compound of the following formula effective to kill mycobacterium:



wherein Ar is an aryl group selected from the group consisting of phenyl, 4-pyrimidinyl, and 2-(2-nitro-3-formyl-phenyl); and

a corrosion inhibitor".

Klimko reportedly discloses the synthesis of phenylmalonaldehyde. However, Klimko does not disclose or suggest that phenyl-propanedial is germicidal. Furthermore, Klimko does not disclose or suggest what amount of phenyl-propanedial is effective to kill mycobacterium. Still further, Klimko does not disclose or suggest that a corrosion inhibitor be included in composition with phenyl-propanedial, or the desirability of including a corrosion inhibitor in a composition with phenyl-propanedial (note that the patent application discloses that the germicidal composition may include a corrosion inhibitor). These points do not appear to be in dispute.

As understood by Appellants, the Examiner appears to be asserting that it would be obvious to combine the phenylmalonaldehyde disclosed in Klimko with the germicidal compositions disclosed in Yagi, Bratescu, and Duran-Patron on the grounds that dialdehyde functionalities are allegedly known to possess potent antibiotic properties as allegedly taught by Duran-Patron. See e.g., the middle of page 5 of the Final Office Action mailed 6/25/07. The Examiner then assumes that it would be obvious to combine the alleged corrosion inhibitor of Bratescu with phenylmalonaldehyde disclosed in Klimko.

Appellants respectfully disagree that it would be obvious to combine the phenylmalonaldehyde disclosed in Klimko with the germicidal compositions disclosed in Yagi, Bratescu, and Duran-Patron on the grounds that dialdehyde functionalities are allegedly known to possess potent antibiotic properties as allegedly taught by Duran-Patron. The Examiner has asserted that Duran-Patron discloses that dialdehyde functionalities are known to possess potent **antibiotic** properties. Appellants respectfully submit that this is not true. To clarify, Duran-Patron more precisely discloses that most (not all) saturated and unsaturated dialdehydes possess "***potent bioactivities***" (emphasis added). See e.g., the first sentence of the Introduction. Furthermore, a bioactive dialdehyde is not necessarily **antibiotic**. The term "bioactive" even encompasses the possibility that the dialdehyde promotes the growth of bacteria, rather of killing the bacteria.

Furthermore, Appellants respectfully submit that Duran-Patron does not disclose or reasonably suggest that dialdehyde functionalities in general are germicidally effective enough to kill **mycobacterium**. Note that claim 1 recites that the compound is "effective to kill mycobacterium". As discussed in the reference "*Sterilization or Disinfection of Medical Devices*", which is included herewith as Attachment 1 (two pages), killing mycobacterium is a task that is practically met by high-level disinfectants and intermediate-level disinfectants, but not by low-level disinfectants:

> "*There are three levels of disinfection: high, intermediate, and low. High-level disinfection kills all organisms, except high levels of bacterial spores, and is effected with a chemical germicide cleared for marketing as a sterilant by the Food and Drug Administration.* ***Intermediate-level disinfection kills mycobacteria, most viruses, and bacteria with a chemical germicide registered as a "tuberculocide" by the Environmental Protection Agency (EPA)*** *(emphasis added). Low-level disinfection kills some viruses and bacteria with a chemical germicide registered as a hospital disinfectant by the EPA*".

Killing mycobacterium is a difficult task for a germicide. There are relatively few known dialdehydes that meet the criteria of intermediate-level disinfectants or better. Simply put, there are literally hundreds of dialdehydes, but very few of these dialdehydes are practically useful for killing mycobacterium.

Duran-Patron discusses the fungal antibiotic properties of a few structurally related botrydial dialdehydes. However, it is well established that even though compounds may have similar functional groups, for example two aldehyde groups, the compounds may nevertheless have drastically different properties. As stated in Duran-Patron itself, "*small structural changes may modulate the biological activities considerably*" (see e.g., Introduction at page 2389). Even among the structurally similar botrydial related compounds investigated in Duran-Patron, the activities were found to be quite "*diverse*" and the differences to be "*dramatic*". See e.g., the bottom of page 2393. Even small structural changes had dramatic reductions in antibiotic properties and made some of the compounds "inactive". See e.g., page 2395.

Appellants respectfully submit that such dramatic changes in antibiotic activities for relatively small structural changes in structurally closely related compounds is indicative of a substantial degree of unpredictability. The degree of unpredictability would be even greater, if more significant structural changes were made. Significantly, the structural dissimilarity between the compounds of claim 1 and the compounds investigated by Duran-Patron are very considerable. For example, the structures of the chemicals given in Table 4 on page 10 of the present patent application differ considerably from the structures of the chemicals given in Duran-Patron.

Submitted herewith as Attachment 2 (three pages) is a declaration pursuant to 37 C.F.R. § 1.132, signed by Dr. Jean-Yves Maillard, an expert in the field of antimicrobial activity. In this declaration, Dr. Maillard states his opinion that it is completely unreasonable for the Examiner to assume that any given dialdehyde would be germicidally effective enough to kill mycobacterium. Dr. Maillard expressed his opinion that the interactions between aldehydes and cells are too complex to allow for simple prediction based on chemical structure alone. Furthermore, Dr. Maillard expressed his opinion that the activities against *Bacillus subtilis* reported in Duran-Patron cannot be extrapolated to mycobactericidal activity and that the use of acetone in experiments in Duran-Patron may have changed cell permeability.

In the Response to Arguments section beginning on page 7 of the Final Office Action mailed on 6/25/07, the Examiner has argued that "*a compound and its properties are inseparable*" and that "*if the prior art teaches the identical chemical structure, the disclosed properties are necessarily present*". However, Appellants respectfully submit that the prior art doesn't teach a "*germicidal composition*" comprising "*a compound ... effective to kill mycobacterium*" and "*a corrosion inhibitor*". Accordingly, Appellants respectfully submit that this argument is irrelevant, since Klimko doesn't teach the same composition.

In the Response to Arguments section beginning on page 8 of the Final Office Action mailed on 6/25/07, the Examiner has argued that "*dialdehyde compounds disclosed by Duran-Patron et al. possess some level of bioactivity, which would present a reasonable expectation of success*". Appellants respectfully disagree for the reasons discussed above and given in the 132 Declaration by Dr. Maillard. There are literally hundreds of dialdehydes, but very few of these dialdehydes are practically useful for killing mycobacterium as claimed. Furthermore, Appellants respectfully submit that the synthesis and/or germicidal experiments are time consuming and expensive. This as well as the significant degree of unpredictability and the large number of possible compounds to test contribute to there being an undue amount of experimentation. For these and other reasons, Appellantes respectfully submit that there is no reasonable expectation of success.

In the Response to Arguments section beginning on page 8 of the Final Office Action mailed on 6/25/07, the Examiner has argued that "*the conclusion in the Declaration is opinion in nature and is not supported with scientific data or results*". Appellants respectfully disagree. These opinions are based on years of research experience including performing numerous experiments and analyzing numerous experimental results that are relevant to the matter at hand. Furthermore, Appellants respectfully submit that the well reasoned opinion given in the 132 Declaration by Dr. Maillard should outweigh the mere introductory and unqualified sentence in Duran-Patron that "*most saturated and unsaturated dialdehydes possess potent bioactivities*".

The Examiner has also asserted that the statements regarding acetone are "*irrelevant since the claims use the transitional phrase 'comprising' thus allowing the use of acetone*". Appellants respectfully submit that claim 1 states that the *compound* is "*effective to kill mycobacterium*" so that these statements made with respect to acetone are still believed to be relevant.

Appellants respectfully submit that it should not be the position of the USPTO that the USPTO will not grant any more patents to newly discovered bioactive dialdehyde compounds based solely on the statements made in Duran-Patron. Appellants respectfully submit that this stance is not consistent with promoting the progress of the arts, since it would not encourage the discovery of new and improved germicidal dialdehyde compounds.

Accordingly, Appellants respectfully submit that it is simply unreasonable and inappropriate to assume, based on Duran-Patron, that there is any reasonable expectation of success that any given dialdehyde selected from the large number of possible dialdehydes, regardless of its structure, would be germicidally effective enough to kill mycobacterium. Accordingly, it would not be obvious to combine the phenylmalonaldehyde synthesized in Klimko with the germicidal compositiosn disclosed in Yagi, Bratescu, or Duran-Patron. For at least one or more of these reasons, claim 1 and its dependent claims are believed to be allowable.

GROUP III: CLAIMS 19-24 AND 37

Claim 19 pertains to a germicidal composition comprising:

"*a diluent;*

phenyl-propanedial; and

isophthalaldehyde, wherein the germicidal composition is effective to kill mycobacterium".

As discussed above, Klimko does not disclose or suggest that phenyl-propanedial is germicidal. Therefore, it would not be obvious to include phenyl-propanedial with isophthalaldehyde in a germicidal composition. The discussion above is pertinent to this point.

Furthermore, the isophthalaldehyde significantly and unexpectedly enhances the germicidal efficacy of the phenyl-propanedial as evidenced in Example 11 on page 28 of the present patent application.

CONCLUSION

Based on the foregoing, Appellants request that the Board overturn the rejection of all pending claims and hold that all of the claims of the present application are allowable.

Appellants respectfully petition for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17 for such an extension.

Please charge any shortages and credit any overpayment to our Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: 11/26/07 By Brent E. Vecchia

Brent E. Vecchia, Reg. No. 48,011
Tel.: (303) 740-1980 (Mountain Time)

1279 Oakmead Parkway
Sunnyvale, California 94085-4040

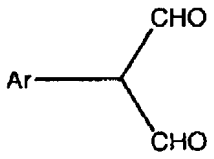
VIII. CLAIMS APPENDIX (37 C.F.R. § 41.37(c)(1)(viii))

The text of the claims involved in the appeal are:

1. (Previously Presented) A germicidal composition comprising:

a diluent;

an amount of a compound of the following formula effective to kill mycobacterium:



wherein Ar is an aryl group selected from the group consisting of phenyl, 4-pyrimidinyl, and 2-(2-nitro-3-formyl-phenyl); and

a corrosion inhibitor.

2. (Cancelled)

3. (Previously Presented) The composition of claim 1, further comprising:

a buffer;

a chelating agent; and

a surfactant.

4. (Original) The composition of claim 3, further comprising:

a fragrance; and

a coloring agent.

5. (Withdrawn) A method comprising killing bacteria by contacting the bacteria with the composition of claim 1.

6. (Withdrawn) A method comprising disinfecting a surface by contacting the surface with the composition of claim 1 for a period of time and at a temperature effective to disinfect the surface.

7. (Original) The composition of claim 1, wherein Ar is phenyl.

8. (Previously Presented) The composition of claim 7, wherein the amount of the compound is effective to kill at least $1x10^6$ *Mycobacterium terrae* bacteria in contact with the composition in less than one hour with a bacteria suspension test at a temperature of 20°C.

9. (Withdrawn) A method comprising disinfecting a surface by contacting the surface with the composition of claim 8 for a period of time and at a temperature effective to disinfect the surface.

10. (Previously Presented) The composition of claim 7, further comprising an enhancer to enhance a germicidal efficacy of the compound, the enhancer selected from the group consisting of isophthalaldehyde and a combination of isophthalaldehyde and terephthalaldehyde.

11. (Withdrawn) The composition of claim 1, wherein Ar is 4-pyrimidinyl.

12. (Withdrawn) A method comprising disinfecting a surface by contacting the surface with the composition of claim 11 for a period of time and at a temperature effective to disinfect the surface.

13. (Withdrawn) The composition of claim 11, wherein the amount of the compound is effective to kill at least $1x10^4$ *Mycobacterium terrae* bacteria in contact with the

composition in less than five minutes with a bacteria suspension test at a temperature of 20°C.

14. (Withdrawn) The composition of claim 1, wherein Ar is 2-(2-nitro-3-formyl-phenyl).

15. (Withdrawn) A method comprising disinfecting a surface by contacting the surface with the composition of claim 14 for a period of time and at a temperature effective to disinfect the surface.

16. (Withdrawn) The composition of claim 14, wherein the amount of the compound is effective to kill at least $1x10^4$ *Mycobacterium terrae* bacteria in contact with the composition in less than five minutes with a bacteria suspension test at a temperature of 20°C.

17-18 (Cancelled)

19. (Previously Presented) A germicidal composition comprising:

a diluent;

phenyl-propanedial; and

isophthalaldehyde, wherein the germicidal composition is effective to kill mycobacterium.

20. (Original) The composition of claim 19, wherein the isophthalaldehyde is an enhancer for the germicidal efficacy of the phenyl-propanedial.

21. (Withdrawn) A method comprising killing bacteria by contacting the bacteria with the composition of claim 19.

22. (Original) The composition of claim 19, further comprising terephthalaldehyde.

23. (Original) The composition of claim 22, wherein the isophthalaldehyde and the terephthalaldehyde are an enhancer for the germicidal efficacy of the phenyl-propanedial.

24. (Withdrawn) A method comprising disinfecting a surface by contacting the surface with the composition of claim 23.

25. (Previously Presented) The composition of claim 1, wherein the amount of the compound is effective to kill at least $1x10^6$ *Mycobacterium terrae* bacteria in contact with the composition in less than one hour with a bacteria suspension test at a temperature of 20°C.

26. (Cancelled)

27. (Previously Presented) The composition of claim 1, further comprising tuberculosis in contact with the diluent.

28. (Previously Presented) The composition of claim 1, further comprising bacteria in contact with the diluent.

29. (Previously Presented) The composition of claim 28, wherein the bacteria comprise mycobacterium.

30. (Previously Presented) The composition of claim 29, wherein the bacteria comprise *Mycobacterium terrae.*

31. (Previously Presented) The composition of claim 1, wherein the compound is an intermediate disinfectant.

32. (Withdrawn) A method comprising killing mycobacterium by contacting the bacteria with the composition of claim 1.

33. (Previously Presented) The composition of claim 1, in contact with a medical instrument.

34. (Previously Presented) The composition of claim 7, wherein the germicidal compound has a concentration ranging from 0.1 to about 1%.

35. (Withdrawn) The composition of claim 11, wherein the germicidal compound has a concentration ranging from 0.1 to about 2.3%.

36. (Withdrawn) The composition of claim 14, wherein the germicidal compound has a concentration ranging from 0.1 to about 2.1%.

37. (Previously Presented) The composition of claim 19, wherein an amount of the phenylpropanedial is effective to kill at least $1x10^6$ *Mycobacterium terrae* bacteria in contact with the composition in less than one hour with a bacteria suspension test at a temperature of 20°C.

IX. EVIDENCE APPENDIX (37 C.F.R. § 41.37(c)(1)(ix))

Included in the Evidence Appendix are Attachment 1 (two pages) and Attachment 2 (three pages) referred to in Section VII Argument. To the best of Appellant's knowledge, there is no other evidence submitted pursuant to 37 CFR Sections 1.130, 1.131, or 1.132.

ATTACHMENT 1

Department of Health and Human Services
Centers for Disease Control and Prevention

Sterilization or Disinfection of Medical Devices

The following principles are applicable to most questions CDC receives about sterilization or disinfection of patient-care equipment. However, these statements are not comprehensive.

General Principles

1. In general, reusable medical devices or patient-care equipment that enters normally sterile tissue or the vascular system or through which blood flows should be sterilized before each use. Sterilization means the use of a physical or chemical procedure to destroy all microbial life, including highly resistant bacterial endospores. The major sterilizing agents used in hospitals are a) moist heat by steam autoclaving, b) ethylene oxide gas, and c) dry heat. However, there are a variety of chemical germicides (sterilants) that have been used for purposes of reprocessing reusable heat-sensitive medical devices and appear to be effective when used appropriately, i.e., according to manufacturer's instructions. These chemicals are rarely used for sterilization, but appear to be effective for high-level disinfection of medical devices that come into contact with mucous membranes during use (e.g., flexible fiberoptic endoscopes).
2. Disinfection means the use of a chemical procedure that eliminates virtually all recognized pathogenic microorganisms but not necessarily all microbial forms (e.g., bacterial endospores) on inanimate objects. There are three levels of disinfection: high, intermediate, and low. High-level disinfection kills all organisms, except high levels of bacterial spores, and is effected with a chemical germicide cleared for marketing as a sterilant by the Food and Drug Administration. Intermediate-level disinfection kills mycobacteria, most viruses, and bacteria with a chemical germicide registered as a "tuberculocide" by the Environmental Protection Agency (EPA). Low-level disinfection kills some viruses and bacteria with a chemical germicide registered as a hospital disinfectant by the EPA.
3. Heat stable reusable medical devices that enter the blood stream or enter normally sterile tissue should **always** be reprocessed using heat-based methods of sterilization (e.g., steam autoclave or dry heat oven).
4. Laparoscopic or arthroscopic telescopes (optic portions of the endoscopic set) should be subjected to a sterilization procedure before each use; if this is not feasible, they should receive high-level disinfection. Heat stable accessories to the endoscopic set (e.g., trocars, operative instruments) should be sterilized by heat-based methods (e.g., steam autoclave or dry heat oven).
5. Reusable devices or items that touch mucous membranes should, at a minimum, receive high-level disinfection between patients. These devices include reusable flexible endoscopes, endotracheal tubes, anesthesia breathing circuits, and respiratory therapy equipment.
6. Medical devices that require sterilization or disinfection must be thoroughly cleaned to reduce organic material or bioburden before being exposed to the germicide, and the germicide and the device manufacturer's instructions should be closely followed.
7. Except on rare and special instances (as mentioned below), items that do not ordinarily touch the patient or touch only intact skin are not involved in disease transmission, and generally do not necessitate disinfection between uses on different patients. These items

include crutches, bedboards, blood pressure cuffs, and a variety of other medical accessories. Consequently, depending on the particular piece of equipment or item, washing with a detergent or using a low-level disinfectant may be sufficient when decontamination is needed. If noncritical items are grossly soiled with blood or other body fluids, follow instructions outlined in the section on **HIV-related sterilization and disinfection** of this information system.

Exceptional circumstances that require noncritical items to be either dedicated to one patient or patient cohort, or subjected to low-level disinfection between patient uses are those involving:

1. Patients infected or colonized with vancomycin-resistant enterococci or other drug-resistant microorganisms judged by the infection control program, based on current state, regional, or national recommendations, to be of special or clinical or epidemiologic significance
   or
2. Patients infected with highly virulent microorganisms, e.g., viruses causing hemorrhagic fever (such as Ebola or Lassa).

If you have questions about a low- or intermediate-level disinfectant and certain sterilants, contact the manufacturer, or the Antimicrobial Program Branch, Environmental Protection Agency (EPA) hotline (703) 308-0127 or email: info_antimicrobial@epa.gov. The EPA is the federal regulatory agency for low- or intermediate-level disinfectants and some sterilants.

If you have questions about high-level disinfectants (sterilants), or how to clean, disinfect or sterilize a particular medical device, first contact the manufacturer of the product. If you are unable to obtain sufficient information in this manner, contact the Food and Drug Administration (FDA) regional office or the FDA Center for Devices and Radiological Health at (301) 443-4690. FDA is the federal regulatory agency for safe and effective use of medical devices and is now also responsible for regulation of chemical sterilants.

Date last modified: August 20, 2002
Content source: Division of Healthcare Quality Promotion (DHQP)

ATTACHMENT 2

O Our Docket No: 56301.P5007

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
Zhu et al.	)	Examiner: Yong S. Chong
	)	
Application No: 10/769,598	)	Art Unit: 1617
	)	
Filed: January 30, 2004	)	
	)	
For: Germicidal Compositions Containing Phenylmalonaldehyde-Type Compounds or Mixtures of Phenylmalonaldehyde-Type Compounds and Phthalaldehydes, and Methods of Using such Compositions for Disinfection or Sterilization	)	

Commissioner of Patents and Trademarks
Washington, D.C. 20231

DECLARATION PURSUANT TO 37 C.F.R. §1.132

Sir:

I, Dr. Jean-Yves Maillard, presently hold the position of Senior Lecturer in Pharmaceutical Microbiology, at the Welsh School of Pharmacy, at Cardiff University, Wales, United Kingdom. I have extensive research experience in the antimicrobial activity of microbiocides, the mechanisms of action of antimicrobial agents, and the interaction between micro-organisms and microbiocides. I have numerous publications on these subjects. Currently, I am the Chief Editor of "Letters in Applied Microbiology" and a member of the Editorial Board for the Journal of Antimicrobial Chemotherapy. I am the recipient of the WH Pierce Memorial prize 2003. I am also the recipient of the BPC Conference Science award 2003. Overall, I am considered to be an expert in the field of antimicrobial activity and mechanisms of action of, and microbial resistance to, microbiocides and antimicrobial agents.

I have reviewed the Office Action mailed 12/28/2006 and in particular have closely reviewed pages 4-8 of this Office Action. I have carefully considered the Examiner's remarks on these pages 4-8 concerning the 35 U.S.C. §103(a) rejection of certain claims on Klimko et al. translated from Zhurnal Obshchei Khimii, 1959, Vol. 29, No. 2, pg. 4027-4029 (hereinafter "Klimko"), U.S. Patent No. 6,429,220 to Yagi et al. (hereinafter "Yagi"), U.S. Patent Application 2004/0071653 A1 by Bratescu et al. (hereinafter "Bratescu"), and Durán-Patrón et al., Tetrahedron 55 (1999) pp. 2389-2400, (hereinafter "Durán-Patrón"). I have also carefully considered the Examiner's remarks concerning the 35 U.S.C. §103(a) rejection of certain claims on Klimko, Yagi, Bratescu, Durán-Patrón, and Rubbo , (1967), J. Appl. Bact. 30 (1), 78-87.

I have reviewed Klimko sufficiently to understand the Examiner's application of this reference and have carefully read the abstract. I have reviewed Yagi sufficiently to

understand the Examiner's application of this reference and have carefully read column 6, lines 52-67. I have reviewed Bratescu sufficiently to understand the Examiner's application of this reference and have carefully read paragraphs [0183], [0184], and [0196]. I have carefully read through and carefully considered all of pages 2389-2400 of Durán-Patrón. I have reviewed Rubbo sufficiently to understand the Examiner's application of this reference.

It is my understanding that the Examiner has taken the position that it would be obvious to assume that any dialdehydes, including the compounds referred to in present claims 1, 7, 11, 14, and 19, would have a reasonable expectation of success of being germicidally effective enough to kill mycobacterium based on what is disclosed in Durán-Patrón. It is my understanding that the Examiner believes that the disclosure of Durán-Patrón. suggests that dialdehyde functionalities in general possess sufficiently potent antibiotic properties to lead one to believe that any dialdehyde would have a reasonable expectation of success of being germicidally effective enough to kill mycobacterium.

I respectfully disagree with the Examiner's position and interpretation of Durán-Patrón. In my opinion, Durán-Patrón does not disclose that any given dialdehyde would have a reasonable expectation of success of being germicidally effective enough to kill mycobacterium. Accordingly, in my opinion, there is no reason to conclude based on Durán-Patrón. that the compounds referred to in present claims 1, 7, 11, 14, and 19 would have a reasonable expectation of success of being germicidally effective enough to kill mycobacterium. The compounds discussed in Durán-Patrón are structurally significantly different than those of present claims 1, 7, 11, 14, and 19 and even Durán-Patrón indicates that small structural changes may modulate the biological activities considerably. Rubbo also reported that biocidal activity correlated to chemical structure, further refuting the notion that any given dialdehyde would have sufficient efficacy to kill mycobacterium.

The Examiner has asserted that "compounds and properties are inseparable". However, when one refers to activity against micro-organisms, in particular, mycobacterium, such a statement has no practical meaning, since antimicrobial activity can not always be predicted based on chemical structure alone. The interactions between aldehydes (usually considered as highly reactive alkylating agents) and the target cells are too complex to allow for simple prediction based on chemical structure alone. Indeed, aldehyde-based compounds will have multiple target sites against micro-organisms. The number of target sites affected, the level of interactions with these target sites, and the subsequent alterations or destruction of these target sites will produce no-effect, a mild-effect (e.g. growth inhibition) or a lethal effect. Such effect can not be predicted by understanding the chemical structure of the molecule alone.

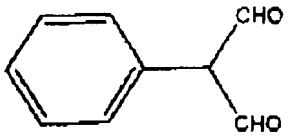
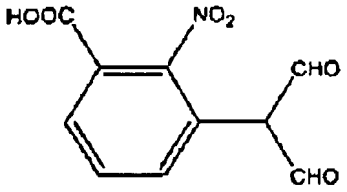
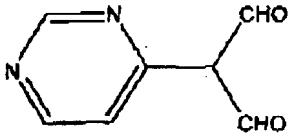
The Examiner's comments are based heavily on the Durán-Patrón paper. From a practical point of view, I noted that the experiments described in this paper did not allow for repeatability in results. In addition the use of acetone might have added changes in cell permeability, enhancing the interaction-cell active (i.e. phenomenon commonly known as potentiation) and hence the results observed might not have reflected solely on the action with the aldehydes. In addition, this paper described activity against *Bacillus. subtilis* and the results can not be extrapolated to mycobactericidal activity. Finally Durán-Patrón describes simple measurement of activity as minimum inhibitory

concentration, but does not inform on the mechanism of action or interaction with microbial macromolecules. The discussion in this paper is thus speculative assuming interactions based on an understanding of chemical structures, but such speculation are not corroborated with solid experimental proof; i.e. the binding to, and alterations of, specific target sites have not been investigated in this paper.

In my experience and opinion, it is completely unreasonable for the Examiner to assume that any given dialdehyde would be germicidally effective enough to kill mycobacterium. What I have read of the Examiner's remarks and what is disclosed in Durán-Patrón does not change my opinion on this matter. In my experience, killing mycobacterium is well known to be a difficult task. I agree with the Applicants previously argued position that there are literally hundreds of dialdehydes, but very few would be practically useful for killing mycobacterium.

For clarity, I have reviewed the structures of the compounds of present claims 1, 7, 11, 14, and 19, which are reproduced below in Table 4 from the patent application.

Table 4

Compound	Name
	phenyl-propanedial
	3-(1-formyl-2-oxoethyl)-2-nitro-benzoic acid
	4-pyrimidinyl-propanedial

For clarity, based on my experience, and in my opinion, I cannot tell from the structures of these three compounds alone that they would be killing mycobacterium.

Respectfully submitted,

Date 26 APRIL, 2007

Dr. Jean-Yves Maillard

X. RELATED PROCEEDINGS APPENDIX (37 C.F.R. § 41.37(c)(1)(x))

(To the best of Appellant's knowledge, there are no related appeals or interferences.)